

Work-Order ID 84897

84897

Page 1

May-29-12 2:48:44 PM

Item ID: D209-669-043

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Replacement Skidtube

Start Date: 29/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: *MLJ*

Date: *12/05/29* Tooling:

Date:

Run Start ***NR1***

QC:

Date: SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D2906

Rev B

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D209-669 bluefile & type labels per PPP D205-669-043 Chg 002

003

per E1N12599

h

N/A

110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

- Inspect mat'l D2500-1-190 for damage

-Drill pilot holes using drill jig DT8149, DT8711-2 & DT8711-3 (Do not use cutting fluid)

-Open holes to 0.500" as per Dwg D2906 without cutting fluid

-Deburr and blow out all chips from

-Acid etch and Alodine tube per QSI 005 4.1

> CF 12-6-18

SAD 12-06-18

26 12-6-18

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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QC: Date:

SPC (Y/N): Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120 QC3- Inspect Part Finish 0.00

120

QC

Memo

0.00

Quality Control

DP 12-6-18

130 0.00

130

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291

Sikaflex expire date: 13-4-15

Start Time: 15:45

Date: 12-6-18

Fin Time: 10:00

Date: 12-07-05

pick:

Qty

P/N

description

P/N

1

D2926-3

Web

84949

CF 12-6-18

W/O:		WORK ORDER CHANGES					
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N9000040100

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Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140		0.00							
140	BENDING MACHINE - CROSSTUBES								
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	1-Bend as per program COB43FWD & COBRAFT on CNC Bender and Folio FT								
	2-Cut tubes as per Dwg. D2906								
150		0.00							
150	Skidtubes								
Skidtubes	Memo	0.00							
Skidtubes	-Deburr ends and remove marks from bending								
	- Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2 x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimention.								
160		0.00							
160	QC5- Inspect part completeness to step on W/O								
QC	Memo	0.00							
Quality Control									

CF 12.6.19

BE12-06-19

CF 12-7-4 / CF 12-7-5

1 0 BE12/07/05

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Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

170

0.00

170

Large Fab

0.00

Skidtubes

Memo

-Drill holes for wearplates using DT8217 Open holes to 19/64", adjust stopper not to hit web. Debur

-Drill pilot holes for aft & fwd cap using DT8215 open holes to #6" Debur

-Drill pilot holes for Tow ring using DT8091-3 , open to .640" and Debur

① JAD 2-07-05

190

QC5- Inspect part completeness to step on W/O

0.00

190

8/2/07/05

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

Pressure Wash per QSI005 4.3

0.00

200

HandFinish

Memo

0.00

Hand Finishing

1 MG 12-7-5

210

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

210

Powdercoat

Powder Coating

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

0.00

220

QC3- Inspect Part Finish

0.00

220

QC

Quality Control

Memo

0.00

1X ✓ M-L 12/07/05

1 ✗ SP 12/07/06

W 121841

3:30
320
4:00

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
230	HandFinishing					1	2	2P	12/07/09
HandFinish	Memo	0.00							
Hand Finishing	1-Install inserts & wearplates as per Dwg. D2906. Use a drop of Sikaflex on insert holes before installing wearplates A/R Sikaflex-291 <u>121130</u> Sikaflex expire date: <u>14/03</u> 2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2906 3-Inspect for foreign object per QSI 024 4-Install D2855 Fwd & Aft Cap as per Dwg D2906 and seal Fwd & Aft Cap with Sikaflex. Clean excess adhesive A/R Sikaflex-291 <u>121130</u> Sikaflex expire date: <u>14/03</u> 5-Wing Walk as per Dwg D2906 and QSI 005 4.4 Batch: <u>122320</u>								

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1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

240

QC5- Inspect part completeness to step on W/O

0.00

240

QC

Quality Control

Memo

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

0.00

250

Packaging

0.00

250

Packaging

Packaging

Memo

Identify and pack for shipping as per PPPD209-669-043

Location:

PPP Rev:

0.00

260

QC21- Final Inspection - Work Order Release

0.00

260

QC

Quality Control

Memo

0.00

12/2/12

12/7/18

mf 12-07-78

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Picklist Print

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Page 1

Work Order ID: 84897

84897

Parent Item: D209-669-043

D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

new IPP 08.02.13 LL, verified by: DD
IPP Rev:B remove DT # in seq140 DD 10.03.10 Verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4202-1 *D4202-1* Spacer		Manufactured	No				Each	81.0000		19			
									**	(19) CF 12-7-4			
				<u>Location</u>			<u>Loc Qty</u>			<u>Loc Code</u>			
				LG			5						
					77727		5						
				LG002			76						
					78806		6						
					79810		70						
D2500-1-190 *D2500-1-190* Ext'n -I' Beam Tube 4"		Manufactured	No			110	Each	91.0000	1	1			
									**	CF 12-6-18			
				<u>Location</u>			<u>Loc Qty</u>			<u>Loc Code</u>			
				HALL			91						
					74777		14						
					80061		77						
D2926-3 *D2926-3* Web		Manufactured	No			110	Each	0.0000	1	1			
									**	(1) CF 12-6-18			
D2855 *D2855* Cap		Manufactured	No			230	Each	21.0000	2	2			
									**	2 (22) 12/07/09			
				<u>Location</u>			<u>Loc Qty</u>			<u>Loc Code</u>			
				FP002	84952		21						
					65519		2						
					73347		16						
					75074		3						

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Work Order ID: 84897

Parent Item: D209-669-043

Parent Item Name: Replacement Skidtube

84897

D209-669-043

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN3-5A Purchased No

230 Each

1,090.000 4 4

AN3-5A

Bolt

**

4

(2P)

12/07/09

Location

Loc Qty

Loc Code

ST350

1090

115371

46

117423

124

118626

31

119355

200

120187 ✓

500

121185

189

AN960JD10L

*

NAS1149D0332J ✓

Purchased

No

230

Each

0.0000

4

4

*AN960JD10L *

Washer

ALS7-1032-130

Purchased

No

230

Each

2,136.000

44

44

ALS7-1032-130

Insert

**

4

(2P)

12/07/09

12/01/11

**

44

(2P)

12/07/09

Location

Loc Qty

Loc Code

ST280

51

117717

27

118966

22

119775

2

ST282

2085

119530

73

120181

12

121444

2000

121269 ✓



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Parent Item: D209-669-043

D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

230

Each

1,458.000

44

44

AN3C4A

BOLT

**

44

2P

12/07/09

Location

Loc Qty

Loc Code

ST350

12251✓

1458

23

120187

57

120521

28

120769

38

121205✓

1000

21

121556

335

AN960C10L

*NAS1149C0332✓
R

Purchased

No

230

Each

0.0000

44

44

*AN960C10I *

washer

D2594-3

Manufactured

No

230

Each

2,418.000

14

14

D2594-3

O-Ring, 205 Skidtube

**

44

2P

12/07/09

**

14

2P

12/07/09

Location

Loc Qty

Loc Code

FP001

2418

65518

41

79496

984

79573

50

79755✓

1343

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Shop Packet Print

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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Parent Item Name: Replacement Skidtube

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D209-669-043

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

230 Each

311.0000 14 14

D2594-1

Plug, 205 Skidtube

**

14

DP

12/07/09

Location

Loc Qty

Loc Code

FP001

98

73401

30

74442

18

79495

50

FP-A

213

73401

0

78590 ✓

213

D3564-9

Manufactured No

230 Each

22.0000 1 1

D3564-9

Wearshoe

**

1

DP

12/07/09

Location

Loc Qty

Loc Code

FG

84870 ✓

4

76950

4

FP001

18

67590

4

69943

1

82255

13

D3564-11

Manufactured No

230 Each

8.0000 1 1

D3564-11

Wearshoe

**

1

DP

12/07/09

Location

Loc Qty

Loc Code

FG

4

77056

4

FP001

4

80341

4

84871

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D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

D3564-5

Manufactured No

230

Each

13.0000

1

1

D3564-5

Wearshoe

**

1

28

12/07/09.

Location

Loc Qty

Loc Code

FG

84869 ✓

2

34806

2

FP001

11

77609

3

82254

8

D3566-1

Manufactured No

230

Each

31.0000

2

2

D3566-1

Gasket

**

2

28

12/07/09.

Location

Loc Qty

Loc Code

FP

84871 ✓

-22

81619

10

FP002

53

68924

2

80919

3

83898

16

D3566-5

Manufactured No

230

Each

21.0000

1

1

D3566-5

Gasket

**

1

28

12/07/09.

Location

Loc Qty

Loc Code

FP

12

82275

12

FP002

9

80374

3

82274

6

84881 ✓

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QTY -041	QTY -043	Part Number	Description
X		D2906-041	SKIDTUBE ASSEMBLY
	X	D2906-043	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
22	19	D2579	CROSS BOLT SPACER
12	14	D2594-1	PLUG
12	14	D2594-3	O-RING
2	2	D2855	AFT CAP
1		D2926-1	WEB
	1	D2926-3	WEB
1	1	D3564-9	WEARSHOE (REPLACES D2577-1)
1	1	D3564-11	WEARSHOE (REPLACES D2577-3)
1	1	D3564-5	WEARSHOE (REPLACES D2577-5)
1		D3564-15	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1		D3566-15	GASKET
50	44	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or ALS4-1032-130	INSERT
50	44	AN3C4A	BOLT
4	4	AN3-5A	BOLT
50	44	AN960C10L	WASHER
4	4	AN960JD10L	WASHER



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WORK ORDER
NO. 84897 MJS
12/05/29

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) LENGTH OF D2500-1 EXTRUSION BEFORE BENDING = 190 INCHES.
- 3) INSERT D2926-1/-3 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 6) USE DART DRILL TEMPLATE DT2906-041T1 (D2906-041) OR DT2906-043T1 (D2906-043) TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION C-C AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/291.
- 7) WELDING TO BE DONE PER DART QSI 004.
- 8) FINISH:
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2926-1/-3 WEB. POWDER COAT ASSEMBLY WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 9) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (12 PLACES).
- 10) ALL DIMENSIONS ARE IN INCHES.

RELEASED

07.09.04

B	UPDATE DRAWING FORMAT; RE-ORGANIZE; ADD STAINLESS STEEL WEARPLATES AND GASKETS CHANGE WEARPLATE HARDWARE TO SS; PG 1: ADD NOTE 10; PG 2 C7: REMOVE AFT Ø0.640 HOLE FROM -041; PG 3 C3: CORRECTED -043 CAP P/N; PG 3 D7: 38 PLACES WAS 44 PLACES;	CB	07.08.21
A	NEW ISSUE	CP	04.06.22
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	07.08.21		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D2906	REV. B SHEET 1 OF 3
TITLE AH-1 (209) SKIDTUBE ASSEMBLY	SCALE NTS

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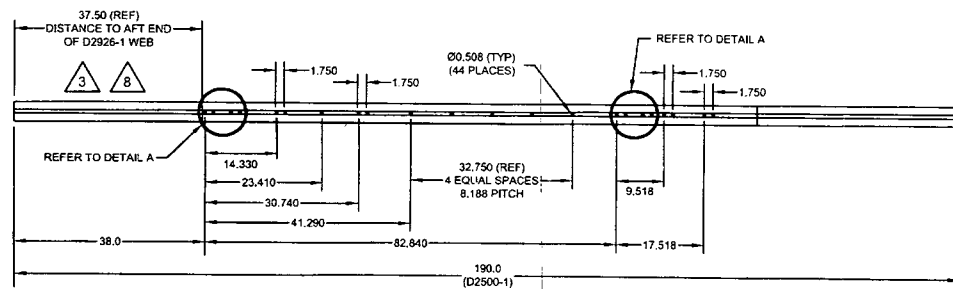
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

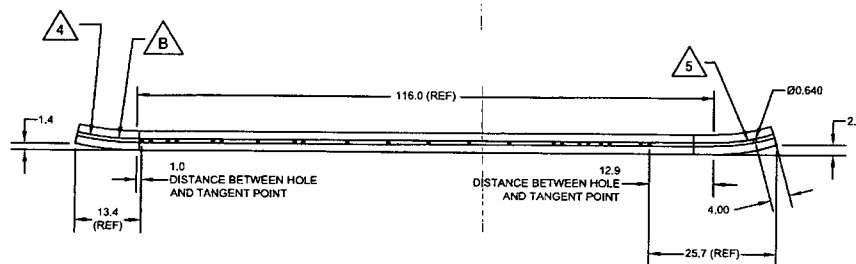
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

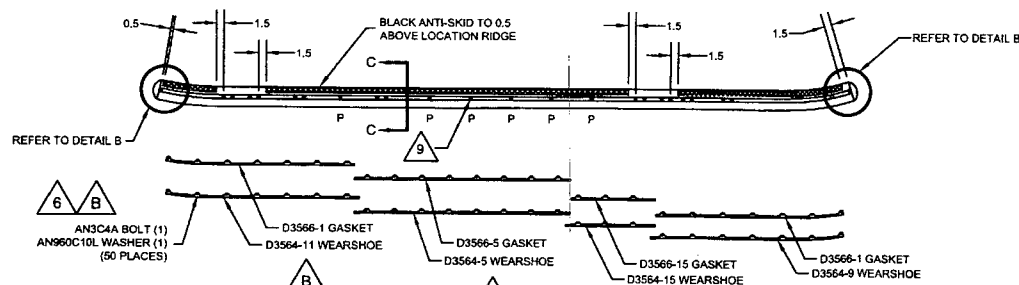
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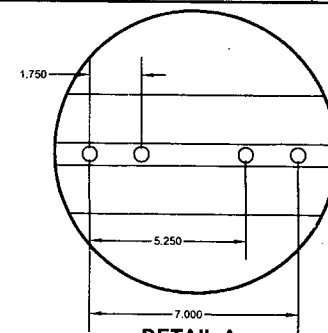
D2906-1 DRILLING DETAIL



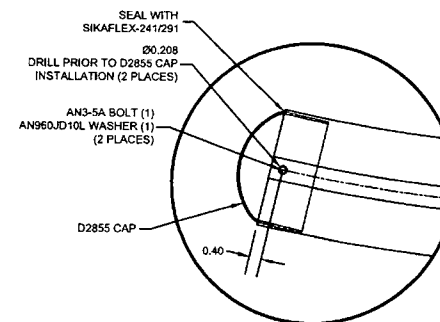
D2906-041 BENDING AND CUTTING DETAIL



D2906-041 ASSEMBLY DETAIL



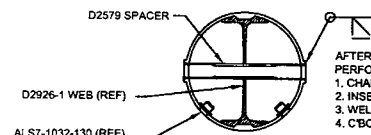
DETAIL A
SCALE 1:4



DETAIL B
SCALE 1:4

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SECTION C-C
SCALE 1:4

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (22 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

DESIGN	90	DART AEROSPACE LTD	
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MFG. APPR.	21	D2906	SHEET 2 OF 3
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DE APPR.	10	AH-1 (209) SKIDTUBE ASSEMBLY	1:24
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



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DESIGN	Q	DART AEROSPACE LTD	
DRAWN	C B	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PH	DRAWING NO.	REV. B
MFG. APPR.	Q	D2906	SHEET 3 OF 3
APPROVED	Q	TITLE	SCALE
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries